CLAIMS

What is claimed is:

1. An apparatus for horizontally actuating hemming and stamping die sets, said apparatus comprising:

a horizontal base support;

a roller device horizontally mounted on top of said horizontal base support;

a linear guidance system set in said horizontal base support;

a drive support vertically attached to said horizontal base support;

a drive mechanism supported by said drive support;

an anvil die set held by said drive support;

a vertically extending platen, said vertically extending platen resting on top of the horizontal base support and loosely guided by said linear guidance system;

a punch die set held by said vertical platen;

a plurality of bushings set in the punch die set;

at least three guide shafts, each secured to said anvil die set on one end and each engaged to one of said bushings of said punch die set on the other end; and

a plurality of link bars attached on one end to said vertical platen via link bar attachments and coupled on the other end to said drive mechanism,

wherein the actuation of the drive mechanism moves the vertical platen in a horizontal direction along the linear guidance system.

2. The apparatus of claim 1 wherein the anvil die set is held on the drive support by a drive support connection feature located in the center of the inside face of the drive support.

3. The apparatus of claim 1 wherein the punch die set is held on the vertical platen by a platen connection feature located in the center of the inside face of the vertical platen.

4. The apparatus of claim 1 further comprising at least one compliance device.

5. The apparatus of claim 4 wherein the compliance device is located on the platen connection feature.

6. The apparatus of claim 4 wherein the compliance device is located on the drive support connection feature.

7. The apparatus of claim 4 wherein the compliance device is located on the link bar attachments.

8. The apparatus of claim 1 wherein the roller device uses ball type rollers.

9. The apparatus of claim 1 wherein the drive mechanism includes a plurality of crank arms, a plurality of bearing blocks, a plurality of tube-type misalignment couplings, a drive motor, a gearbox and at least one drive shaft, said drive motor being connected to said gearbox, said gearbox being connected to said drive shaft, said drive shaft being connected to said tube-type misalignment couplings, said tube-type misalignment couplings being connected to said bearing blocks and said bearing blocks being connected to said crank arms.

10. The apparatus of claim 9 wherein the crank arms are designed to allow for 180° rotation and oscillation.

11. The apparatus of claim 9 wherein the crank arms are designed to allow for a continuous 360° motion.

12. The apparatus of claim 10 wherein the drive shaft is a single inline shaft arrangement.

13. The apparatus of claim 10 wherein the drive shaft is a dual drive shaft arrangement.

14. The apparatus of claim 11 wherein the drive shaft is a single inline shaft arrangement.

15. The apparatus of claim 11 wherein the drive shaft is a dual drive shaft arrangement.

16. A method for horizontally actuating hemming and stamping die sets comprising the steps of:

supporting a vertically extending platen for horizontal motion and a drive support on a horizontally disposed base support;

attaching a punch die set to said platen and a drive mechanism and an anvil die set to said drive support;

coupling crank arms of said drive mechanism to said platen via link bars;

actuating said drive mechanism to move said platen and said punch die set across said horizontal base support to contact the anvil die set, whereby the side-by-side horizontal movement of the die set is used to perform hemming and stamping operations on a working piece.